ABSTRACT OF THE DISCLOSURE

A tunable optical device has a compression tuned optical structure and a displacement sensor. The compression tuned optical structure responds to an optical signal, and further responds to a displacement sensor signal, for providing a compression tuned optical structure signal containing information about a change in an optical characteristic of the compression tuned optical structure, and for also further providing an excitation caused by a change in a displacement of the compression tuned optical structure. The displacement sensor responds to the excitation, for providing a displacement sensor signal containing information about the change in the displacement of the compression tuned optical structure. The compression tuned optical structure may be in the form of a dogbone structure that is an all-glass compression unit having wider end portions separated by a narrower intermediate portion. The displacement sensor includes a capacitance sensor affixed to the compression tuned optical structure for measuring a change in capacitance between two parallel and opposing plates that depends on a change in a gap or an area with respect to the two parallel and opposing plates.